Docket No. 3140-25
Client No. MERL-1163

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#16

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of :
FREEMAN et al. : Group Art Unit: 2713
Serial No. 08/906,493 : Examiner: V. Le
Filed: August 5, 1997 :
For: VIDEO RECORDING DEVICE RESPONSIVE TO TRIGGERING EVENT

Honorable Assistant
Commissioner
for Patents
Washington, DC 20231

I hereby certify that this paper or fee is being deposited with the U.S. Postal Service as First Class Mail addressed to Assistant Commissioner for Patents, Washington, D.C. 20231
on March 30, 2001
Lisa Dorfman
Signature

Sir:

An Appeal Brief is submitted herewith in triplicate, in support of the Notice of Appeal filed February 1, 2001. A check for the Appeal Brief fee, in the amount of $310.00, is enclosed.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment, to Deposit Account No. 12-0429, including any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,
LALOS & KEEGAN

Phillip G. Avruch
Registration No. 46,076

1146 Nineteenth Street, NW
Fifth Floor
Washington, DC 20036
Telephone 202-887-5555
Facsimile 202-296-1682
Date: March 30, 2001

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APPEAL BRIEF

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Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed February 1, 2001.

I. REAL PARTY IN INTEREST

Mitsubishi Electric Information Technology Center America, INC.

II. RELATED APPEALS AND INTERFERENCES

NONE

III. STATUS OF CLAIMS

Claims 1-21 and 32-45 are pending. Each of claims 1-21 and 32-45 are under appeal.

IV. STATUS OF AMENDMENTS

A preliminary amendment was filed on January 31, 2000, and has been entered.

V. SUMMARY OF INVENTION

The Applicants' invention comprises a novel recording device for capturing data proximate in time to an event. In the embodiment disclosed in the application, the inventive device records and stores successive frames of video data (see, for example, page 1, lines 7-11).

As recited in independent claim 1 and with reference to a preferred exemplary embodiment shown in Figure 3, the recording device includes at least one memory 58 and a control processor 54. As discussed in detail on page 7, line 17 through page 8, line 31, these two elements work in conjunction to store data in the memory associated with a time period. The stored data associated with a portion of the time period closer to an event has a first resolution, and the stored data associated with a portion of the time period further from the event has a second resolution, different than the first resolution (see, for example page 11, lines 40-43 and page 14, lines 15-19).

Dependent claims 2-14 and 32-39 recite further aspects of this invention. Claim 2, requires at least one first sensor type to generate the data and at least one second sensor type to generate a signal representing the event. An exemplary first type sensor is the video camera 40 depicted in Figure 3 and discussed at page 5, lines 21-31. The second sensor type, described generally on page 8, lines 32 through page 9, line 1, and shown generically as sensor 70 in Figure 3, may be any type of sensor which provides a trigger output signal in response to a condition which is desired to initiate the capture of the data occurring prior to and following the occurrence of the trigger output signal. Examples given in the application include an accelerometer, an air bag deployment sensor of the type normally used in automobiles, a fire alarm used to detect fire or smoke, a

security alert sensor used to detect movement, glass breakage or unauthorized entry, and an acoustic sensor to detect specific events such as a gunshot. Further, plural sensors may be employed and data capture may be initiated by any one or a combination of such sensors.

Claim 2 also requires that the control processor store data associated with the portion of the time period closer to the event, with the first resolution, in response to the second sensor type signal. As discussed on page 7, lines 17-19, the control processor 54 (see Figure 3) controls the storage of data within memory 58. As discussed on page 14, lines 1-24, for example, the memory may be organized into multiple buffer groups so as to obtain the highest resolution immediately before and after the trigger event.

Claim 3 recites that the at least one second sensor type includes an accelerometer. As noted above, an accelerator is one of the examples of a second sensor type specifically disclosed on page 8, lines 35-43.

Claim 4 requires that the recording device include a capture switch, which a user can activate to cause the control processor to store only a predetermined amount of data within the memory. As discussed on page 10, lines 8-16, with reference to capture switch 72 of Figure 3, user activation of the capture button can serve as a trigger event in response to which a trigger signal would otherwise be provided by the sensor 70. As discussed on page 9, lines 2-6, for example, the control processor 54, upon detection of a trigger event from sensor 70, receives only a predetermined amount of additional data and stores such data in the memory 58.

Claim 5 further defines data stored in the device to be video data representing a plurality of frames, and requires control processor 54 to store the video data such that the number of stored frames per unit of time associated with the portion of time the period closer to the event is greater that the number of stored frames per unit of time associated with the time period further from the event.. Page 13, line 31, through page 14, line

24, discloses, with reference to Figure 6, one of several storage techniques disclosed for capturing a greater number of video frames immediately before and after an event.

In the exemplary technique illustrated in Figure 6, the data buffers are segregated into two groups of buffers, each organized as a circular buffer. Prior to an event, successive frames of video data are stored in the two circular buffers according to a repeating pattern in which, in this case, two frames are stored in the first buffer followed by storage of a third frame in the second buffer. Prior to the event, an older frame occupying any buffer address may be overwritten by a newer frame sent to that address according to the pattern. After the event, storage of frames follows the same pattern, but pre-event frames are no longer overwritten and post-event frames are stored only until all buffer addresses have been filled. As illustrated in Figure 6, the result of using this technique is that no matter when the event occurs, more frames are stored for time periods closer (both before and after) the event than for time periods further from the event.

Claim 6 is directed to compression of the data prior to storage, as discussed in detail on page 6, line 44 through page 7, line 16, of the application. In a preferred embodiment of the invention, a asymmetric compression technique is used which minimizes the computational load on control processor 54 while data is being stored, at the expense of greater complexity in the later decompression process.

Claim 7 recites that the data can be stored at different rates dependent on the occurrence of an event, as discussed on page 12, lines 30-33, with reference to the flow chart of Figure 5.

Claim 8 further recites that the second resolution (associated with the portion of the time period closer to the event) is less than the first resolution (associated with the portion of the time period further from the event). As discussed above in connection with claim 2, the storage of data in memory 58 by the control processor 54 can be organized in a number of

ways so as to provide higher resolution for data captured closer to the event (see Figures 6-8 for examples of such storage techniques).

Claim 9 recites that only approximately half the memory is utilized to store data after the event, as discussed on page 13, lines 2-10.

Claim 10 recites that plural sensors, like sensor 40, can be used to generate data, and that plural memories 58,60 can be used to store the data generated by the plurality of sensors, as discussed on page 4, lines 34-37 and page 6, lines 27-30, for example.

Claims 11-14 are further directed to the features of the image sensor 40 used by the inventive device to gather video data, as described at page 4, lines 23-34. Specifically, claim 11 recites that the image sensor 46 may include a charge coupled device to generate the data, claim 12 recites that the device includes a lens 44 to focus an image on the image sensor 46 of claim 11, to cover a viewing angle, claim 13 recites that the image sensor 46 may include an artificial retina, and claim 14 recites that the device includes a lens 44 to focus an image on the artificial retina of claim 13.

As recited in claims 32 and 33, and with reference to Figures 2a and 2b, the recording device may include a portable tamperproof housing 10 for the control processor 54 and the memory 58. As discussed on page 11, lines 16-25, for example, an electronic or mechanical seal may be provided to assure that the data stored in the recording device has not been tampered with prior to viewing. As discussed on page 9, lines 35-39, for example, the weight and power consumption of the inventive device are low enough that it can be operated portably on small batteries, such as AA cells.

Claim 34 recites that the control processor can purge the contents of the memory upon user activation of a switch. As disclosed at page 10, lines 35-40, the inventive device includes a purge button 76 (Figure 3) connected to the control processor 54, which upon activation of the purge button 76, erases the

contents of the memory 58.

Claim 36 is directed to encryption of the captured data. As discussed at page 10, lines 41-45, the captured data may be encrypted by any suitable encryption algorithm prior to storage in memory.

Claims 35 and 37-39 are further directed to the storing of data in different resolutions depending on how close or far the time period is during which the data is captured. Claim 35 specifically requires that the first resolution be exponentially higher than the second resolution. As disclosed at page 11, lines 31-36, an exponential change in resolution may be employed in particular applications in response to a trigger event. Claims 37-39 require that the first and second resolutions (i.e., those close to and further from the event, respectively) be at least one of temporal resolutions and spatial resolutions. As discussed at page 7, lines 37-40, in the context of storing video data, the number of bytes required in memory for a particular frame is dependent on the resolution of the video image sensor (i.e., spatial resolution), and the sampling rate of the analog to digital converter (i.e., temporal resolution). Resolution is to be distinguished from data compression (see, for example, page 6, lines 44 through page 7, line 16) and rate of data capture (see, for example, page 11, lines 26-31).

Claim 40 requires that the central processor store only a predetermined amount of data following an event. As discussed above, page 9, lines 2-6, for example, discloses this feature.

Independent claim 15 recites a method for recording data in relation to an event, wherein first data associated with a time period closer to the event is stored so as to have a first resolution, and second data associated with a time period further from the event is stored so as to have a second resolution different from the first resolution. Claims 16-21 and 40-43, which depend from claim 15, recite further aspects of the method that are discussed above in connection with device of claim 1 and its dependencies. In the interest of brevity, the discussion of these features is not repeated here.

Claims 44 and 45 recite the invention somewhat differently. This device is compact, portable, and has no moving parts. Claim 44 requires a device that generates data associated with a period of time (see, for example, page 4, lines 22-27), generates a signal representing an event (see page 8, lines 32-35), and includes a processor that stores data in at least one circular buffer memory (see page 7, lines 17-40). The claim further requires that stored data associated with a portion of the time period following an event have a first resolution, and stored data associated with a portion of the time period prior to the event have a second resolution lower that the first (see, for example, page 14, lines 1-19). Also required are a portable housing configured to house the control processor and the memory (see, for example, Figure 2B, item 10), and at least one connector on the housing for out putting the stored data (see, Figure 3, item 78, and page 10, lines 46 through page 11, line 15).

Claim 45, which depends from claim 44, requires in addition, a user activated capture switch (see Figure 3, item 72, and page 10, lines 8-16), a user activated purge switch (see Figure 3, item 76, and page 10, lines 35-40), a user activated still switch, which allows single video frames to be captured and stored in a protected area of memory (see Figure 3, item 74, and page 10, lines 17-34), at least one power source (see page 9, line 35 through page 10, line 7), and a tamper resistant housing configured to house the sensor gathering the data to be recorded (see Figure 2a, item 10, and page 4, lines 16-25).

VI. ISSUES

Whether claims 1-12, 15-21 and 34-43 are anticipated by Nishijima (U.S. Patent No. 5,915,069).

Whether claims 13-14, 32-33 and 44-45 are obvious over Nishijima in view of Freeman (U.S. Patent No. 6,002,808), and further in view of Chow (U.S. Patent No. 5,016,633).

VII. BRIEF DESCRIPTION OF REFERENCES

The applied Nishijima reference describes a video surveillance system in which video signals from a video camera are recorded in compressed form on a recording medium, such as videotape. Compression is performed at a selected one of a plurality of different compression ratios, which may be switched during recording from a relatively high compression ratio to a relatively low compression ratio upon the occurrence of a predetermined condition (see, for example, column 1, lines 59-67). Switching of the compression ratio is carried out in response to the detection of the predetermined condition by one or more sensors (see, for example, Figure 1, items 5-1 and 5-2, and column 2, lines 1-5). The invention of Nishijima is also capable of recording video signals in an intermittent mode (e.g., one frame/second) prior to the occurrence of the predetermined condition, and switch to a continuous mode (e.g., 30 frames/second) upon the occurrence of the predetermined condition. It should be noted Nishijima discloses that the recording of video signals changes from intermittent mode to continuous mode or from high compression to low compression only at the time of occurrence of the predetermined condition (i.e., trigger event), and not before or after (see, for example Figure 4 and column 4, line 65 through column 6, line 6).

The applied Freeman reference describes a system for rapidly recognizing hand gestures for the control of computer graphics, in which image moment calculations are utilized to determine an overall equivalent image rectangle corresponding to hand position orientation and size (see Abstract). An artificial retina is used advantageously in Freeman because it provides a rapid means of calculating image moments through pre-calculation of x and y projections by the artificial retina chips itself (see column 5, lines 34-40). It is noted that Freeman is a con-inventor in the present application, and that the Freeman patent is also assigned to the real party in interest in this application.

The applied Chow reference describes an artificial retina comprising a silicon chip device composed of a large array of

densely packed micro-photodiodes, which is intended to be implanted between the inner and outer retina layers in patients suffering from retinal dysfunction, to allow for useful formed vision (see Abstract).

VIII. THE REJECTION

Claims 1-12, 15-21 and 34-43 stand rejected under 35 USC §102(e) as anticipated by Nishijima (U.S. Patent No. 5,915,069). Claims 13-14, 32-33 and 44-45 stand rejected under 35 USC §103(a) as being obvious over Nishijima in view of Freeman (U.S. Patent No. 6,002,808), and further in view of Chow (U.S. Patent No. 5,016,633).

Grounds for the rejections where originally stated in the Official Action dated July 14, 2000 (Paper No. 9). In the final Official Action of September 26, 2000 (Paper No. 11), the Examiner provided no further rationale for the rejections, stating only that "[c]laims 1-2, 15-21 and 34-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishijima, P/N 5,915,069 for the same reasons as set forth in ¶5 of the last Office Action" and that"[c]laims 13-14, 32-33 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishijima, P/N 5,915,069 in view of Freeman, P/N 6,002,808 and Chow, P/N 5,016,633 for the same reasons as set forth in ¶7 of the last Office Action."

Rejection of all of the pending claims was maintained in an Advisory Action dated October 25, 1999, replying to a Request for Reconsideration filed on November 22, 2000. In the Advisory Action, the Examiner stated only that the Request for Reconsideration "does NOT place the application in condition for allowance because although the arguments highlight some of the merits of the claimed subject matters, it is viewed that these merits are fully anticipated and/or rendered obvious by the prior art of record."

IX. GROUPING OF CLAIMS

The various claimed embodiments of the invention are defined

within groupings of claims (i) 1-14 and 32-40, (ii) 15-21 and 41-43, and (iii) 44-45. However, the claims of each group do not all stand or fall together. Claims 7-8 and 11-12 stand or fall together with independent claim 1, and claims 16-17, 19-20 and 41-42 stand and fall together with independent claim 15. Claims 2-6, 9-10, 13-14, 18, 21, 32-40 and 43-45 each recite features which form an independent basis for allowance, and hence, stand or fall individually.

X. ARGUMENT

Appellants respectfully traverse the rejections based on the prior art applied against the claims now pending on appeal. As discussed below, it is respectfully submitted that the Examiner has not met the burden of proof in establishing that the appealed claims are anticipated or obvious. It is further respectfully submitted that the rejection fails to provide the required factual basis or even a reasonable rational for the rejections, and fails to apply art which teaches or suggests the claimed invention.

1. THE EXAMINER HAS FAILED TO ESTABLISH A PRIMA FACIE CASE

The initial burden of establishing a basis for denying patentability to a claimed invention rests upon the examiner. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985); In re Piasecki, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984).

The Examiner must provide sufficient factual basis or rationale as to how features of the invention recited in the claims are taught or suggested in the applied art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). The limitations required by the claims cannot be ignored. See In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). No claim limitation, including one which is functional, can be ignored. See In re Oelrich, 666 F.2d 578, 212 USPQ 323 (CCPA 1981). All words in a claim must be considered in deciding the patentability of that claim against the prior art.

Each word in a claim must be given its proper meaning, as

construed by a person skilled in the art. Where required to determine the scope of a recited term, the disclosure may be used. See In re Barr, 444 F.2d 588, 170 USPQ 330 (CCPA 1971).

MPEP §706.07 clearly requires that "before final rejection is in order a clear issue should be developed between the Examiner and applicant." Indeed, the Manual states that "the references should be fully applied" (emphasis added), so as to deal justly with the applicant as well as the public. The Manual goes on to state that "present practice does not sanction hasty and ill-considered final rejections". "The applicant who is seeking to define his or her invention in claims that will give him or her the patent protection to which he or she is justly entitled should receive the cooperation of the examiner to that end." "The examiner should never lose sight of the fact that in every case the applicant is entitled to a full and fair hearing, and that a clear issue between applicant and examiner should be developed, if possible, before appeal."

Further, MPEP §707.07(d) states that "a plurality of claims should never be grouped together in a common rejection unless that rejection is equally applicable to all claims in the group."

As noted above in Section VIII, the Examiner's grounds for the anticipation rejection of claims 1-12, 15-21 and 34-43 are set forth in Paper No. 9, the Official Action of April 14, 2000. Notwithstanding the Appellants' detailed responses on July 14, 2000 and November 22, 2000, the Examiner has, in subsequent papers, merely incorporated the earlier grounds for rejection by reference without further elaboration or rebuttal of Appellants' arguments.

The Examiner's rationale for the rejection of claims 1-12, 15-21 and 34-43, as set forth in Paper No. 9, reads as follows:

> "5. Claims 1-12, 15-21 and 34-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishijima. PN 5915069.
>
> Re claims 1-12, 15-21 & 34-43:
>
> Nishijima discloses (figs. 1-2, 5-8) a video recording system and method steps for application in video surveillance comprising: a CCD video camera (1); central controller (3c); a plurality of sensors for detecting an event (5-1 & 5-2); video monitor (4), a data recorder (3b); and a data compressor (3a).

In Nishijima (see fig. 4), recording can be done either at intermittent mode (e.g., 1fps, 5 fps, etc...) or at continuous mode (i.e., 30 fps). During recording, data are compressed at several different compression ratio to accommodate recording at different video resolution. For example, during the time leading up to detecting (e.g., via sensors 5-1 & 5-2) the occurrence of an event, data are recorded at a high compression rate which would yield a coarse resolution. However, when an event is detected, data are recorded at a low compression rate to ensure greater resolution. (See col. 3, line 1 to col. 4, line 64).

Nishijima also discloses (fig. 6; col. 6, line 36 to col. 7, line 40) a plurality of video camera, each providing respective video data, respective plurality of sensors, respective plurality of recorders, and a multiplexer/demultiplexer used to select the plurality of these devices.

Nishijima also discloses (fig. 8) a clock setting different time intervals for data recording, and controlling the compression rates in accordance to which time interval the recording falls into. Nishijima also discloses that both the clock and the sensors can be incorporated into one system to control the compression ration during recording. (See col. 8, line 16 to col. 9, line 63).

In Nishijima, it is inherent that temporal and spatial resolutions as claimed are directly related to whether compression is carried out interframe (i.e., between frames) or intraframe (i.e., within a frame) respectively. These types of compression are highlighted in Nishijima. (See col. 4, lines 28-64; col. 10, lines 31-37).

In Nishijima, it is inherent that data encryption is involved since error detection and correction is disclosed (col. 4, lines 61-64).

In Nishijima, compression ratio vary from high, to intermediate, to low. This translates to having image resolution that goes from low to high. One can certainly read this as having exponentially higher image resolution as claimed."

As is apparent from the above, claims 1-12, 15-21 and 34-43 were rejected over prior art in omnibus fashion without a clear explanation of the rationale for the rejection of each claim. The Examiner refers to figures and text in the prior art without any indication of the specific claim or claim elements against which the referenced material is being cited. It is respectfully submitted that the Examiner has failed to fully apply the reference so as to assure that clear issues between the Appellant and the Examiner can be developed.

It is further respectfully submitted that the common

anticipation rejection of claims 1-12, 15-21 and 34-43 is not equally applicable to each of the claims. For example, the last paragraph of the Examiner's detailed action, quoted above, discusses the requirement that a first resolution be exponentially higher than a second resolution, which is only applicable to claims 35 and 43. Similarly, the sixth paragraph of the Examiner's explanation, which discusses the requirement for encryption, is only applicable to claim 36, and is not required in the other rejected claims.

It is also noted that the 4th paragraph of the Examiner's action, quoted above, discusses controlling the compression rate according to the time interval into which the recording falls by means of a clock. This paragraph appears to be completely inapplicable, as none of the rejected claims recite such a feature for the present invention.

In addition, the rejection completely ignores features of the rejected claims that are believed to independently distinguish over the prior art. Such features include: the at least one second sensor type includes an accelerometer, as recited in claim 3; a control processor operative to store only a predetermined amount of data within the memory following user activation of the capture switch, as recited in claims 4 and 45; the number of video frames per unit time represented by stored data associated with the period time closer to the event being greater than the number of such frames for the period further from the event, as recited in claim 5; storage of data only in approximately half of the frame locations in memory following the event, as recited in claim 9; a plurality of memories corresponding to the number of sensors, as recited in claim 10; a lens positioned to focus an image on the sensor and to cover a viewing angle, as recited in claims 12 and 14; the second frame rate (i.e., the rate after the event) is less than the first frame rate (i.e., the rate before the event), as recited in claim 21; a purge switch, as recited in claims 34 and 45; the control processor being operative to store only a predetermined amount of data following the event, as recited in claim 40; and a user

activated still switch, as recited in claim 45.

In some instances, the Examiner has applied art in a manner obviously inconsistent with its teachings, and hence effectively fails to provide a reasonable rationale for rejection. For example, claim 18 requires encrypting the first data and the second data prior to storage, and claim 36 requires the control processor to be operative to encrypt data prior to storage in the memory. The Examiner points to column 4, lines 61-64 as disclosing error detection and correction, and asserts for this reason that data encryption is inherently involved. Error detection and correction relate to detecting and correcting encoding errors, while encryption, on the other hand, relates to securing information whether in an encoded or unencoded state. Hence, there is no relationship between the required data encryption of claims 18 and 36 and the relied upon error encoding error detection and correction disclosed by Nishijima.

Claim 39 requires the control processor to be operative to store, on a per unit of time basis, more of the data associated with a portion of the time period closer to an event (whether the portion is before the event, after the event, or both), and less of the data associated with a portion of the time period further from the event. The Examiner points to Figure 4 and column 3, line 1 through column 4, line 64, of Nishijima as disclosing that recording can be done either in an intermittent mode (at selectable frame rates) or in a continuous mode. However, the referenced figure and text disclose only that the recording mode can change at the time of an event in response to a trigger signal from a sensor (see, column 4, lines 12-17). Hence, there is no disclosure of the recited processor of claim 39 in the reference relied upon by the Examiner.

Claim 44 requires a control processor operative to receive the signal representing an event and to store the data in a circular buffer such that the stored data associated with a portion of the time period after receipt of the event signal has a first resolution and the stored data associated with a portion of the time before the event signal has a second resolution lower

than the first resolution. While Nishijima does disclose a variety of recording media that may be used to store captured data, the Examiner fails to identify any disclosure that the memory in Nishijima is organized as a circular buffer.

Hence, it is apparent that the Examiner has failed to provide a reasonable rationale for rejection of claims 1-12, 15-21 and 34-43 based on the application of the prior art, and hence has failed to establish a prima facie basis for the rejection of the claims in the Final Official Action. Furthermore, the Examiner has failed to comply with the requirements of MPEP 706.07 and 707.07(d).

2. THE APPLIED REFERENCES FAIL TO TEACH THE CLAIMED INVENTION

Anticipation, under 35 U.S.C. § 102, requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. Although anticipation requires only that the claim under attack "read on" something disclosed in the reference, all limitations of the claim must be found in the reference, or "fully met" by it. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983).

Claims 1-12, 15-21 and 34-43 stand rejected under 35 USC §102(e) as anticipated by Nishijima, U.S. Patent No. 5,915,069.

With regard to claims 1-12, 15-21 and 34-43, generally, the Examiner points to Figures 1-2 and 5-8 of Nishijima as disclosing a video recording system and method steps for application in video surveillance comprising: a CCD video camera (item 1); a central controller (item 3c); a plurality of sensors for detecting an event (items 5-1 and 5-2); a video monitor (item 4); a data recorder (36); and a data compressor (3a).

Independent claim 1, from which claims 2-12 and 32-40 depend, requires a control processor operative to store the data in the at least one memory such that the stored data associated with a portion of the time period closer to an event (whether before, after or before and after) has a first resolution and the stored data associated with a portion of the time further from

the event has a second resolution different from the first resolution.

With regard to the storage of data in different resolutions, the Examiner points to Figure 4 and column 3, line 1 through column 4, line 64, of Nishijima as disclosing that recording can be done either in an intermittent mode (at selectable frame rates) or in a continuous mode, and image data can be compressed at several different ratios to accommodate recording at different video resolutions. The Examiner asserts that data recorded at a high compression rate would yield a course resolution and data recorded at a lower compression rate would ensure greater resolution.

While it is acknowledged that the apparatus of Nishijima is capable of recording video data at different frame rates and compression ratios, it is respectfully submitted that this does not result in the stored data closer to and further from the event having different resolutions, as required by claim 1. As discussed on page 7, lines 37-40 of the present application, storage requirements for a particular frame are independently affected by resolution of the image sensor, sampling rate of the A/D conversion and the selected compression rate or ratio. That is, the resolution of an image and compression of the image at that particular resolution, are entirely different. Resolution relates to the sharpness of the image, and is usually expressed in terms of the total number of pixels (i.e., picture elements, as measured across and down each video frame), that comprise the image (see, for example, Dictionary of Computer Terms, Barron's 3rd Edition, p. 288). Compression rate or ratio, on the other hand, relates to the amount of data that will be used to represent the image (whatever the resolution of that image). Compression is often performed to conserve storage space (see, for example, definition of data compression at Tech Dictionary.com).

Further, the frame rate, the rate at which individual frames in a sequence of video images is recorded or displayed, does not affect resolution and there is nothing in Nishijima that would

suggest that it does.

As further described on page 11, lines 31-37, of the present application, the storing of images closer to and further from a trigger event at different resolutions, is distinct from storing such images at different compression and frame rates. Thus, with regard to the storage in different resolutions of data representing images closer to and further from an event, the present invention accomplishes its objective in an entirely different manner than that disclosed by Nishijima.

Accordingly, it is respectfully submitted that Nishijima fails to teach, or for that matter suggest, the control processor recited in claim 1, and therefore that claim 1, as well as its dependencies (i.e., claims 2-14 and 32-40), are patentably distinguishable over the applied art.

It is further respectfully submitted that other features recited in the claim 1 dependencies further and independently distinguish over the applied art.

For example, claim 2 requires at least one first sensor type to generate data, at least one second sensor type to generate a signal representing the event, and a control processor that operates to store the data such that the stored data associated with the time period closer to the event has the first resolution responsive to the signal.

The Examiner points to different types of media disclosed by Nishijima for recording data, and contends that with a continuous recording mode, it is inherent to make any of these recording media into a circular memory as claimed. While it is acknowledged that Nishijima discloses various recording media such as magnetic tape and video disc, it is respectfully submitted that Nishijima lacks any teaching or suggestion of a circular memory. To the contrary, Nishijima teaches the use of video compression as the preferred method of extending recording time (see, for example, column 10, lines 1-7). The strictly sequential recording of data in Nishijima precludes storage of data, both before and after an event, such that the resolution of the data is related to its proximity to the event, as required by claim 2.

Claim 3 requires that the at least one sensor type include an accelerometer. The limitation of the sensor to include an accelerometer appears to have been ignored by the Examiner. It is acknowledged that Nishijima discloses a variety of event sensors, such as a motion detector, a light detector, a sound detector, a mechanical switch, and a heat (temperature) sensor (see, for example, column 3, lines 41-44). However, it is respectfully submitted that Nishijima lacks any teaching or suggestion of a sensor which includes an accelerometer.

Claim 4 requires a user activated capture switch, and further limits the control processor to one operative to store only a predetermined amount of data within the memory following user activation of the capture switch. In this way, any desired percentage of the memory can be used for capturing image data after the occurrence of the event (see, for example, page 9, lines 2-16). Here again, it is acknowledged that Nishijima discloses that an event sensor may be a mechanical switch. However, notwithstanding the type of sensor used, Nishijima explicitly teaches that recording stops either when intentionally terminated or when the end of the magnetic tape is reached (see, for example, column 5, lines 58-64), and lacks any disclosure of storing only a predetermined amount of data within the memory following user activation of a capture switch.

Claim 6 is directed to compression of the data prior to storage. Claims 37-39 are directed generally to the temporal and spatial resolution of the captured data. The Examiner points to column 4, lines 28-64, and column 10, lines 31-37, of Nishijima as disclosing the possible use of interframe as well as intraframe compression, to achieve greater storage capacity. The Examiner contends it is inherent that the temporal and spatial resolutions claimed in the present application are directly related to whether compression is carried out interframe or intraframe. Even if the Examiner's characterization of temporal and spatial resolution were correct (which it is respectfully submitted is not the case), it is immaterial in this case because claims 6 and 38 require that the control processor be operative to compress the data associated

with the portion of time closer to the event at a first compression ratio, and the data associated with the portion time further from an event of a second compression ratio different from the first. Claim 39 requires the control processor to be operative to store, on a per unit of time basis, more of the data associated with the portion of the time period closer to an event, and less of the data associated with the portion of the time period further from the event. As discussed above, Nishijima does not disclose either of these features, and hence, it is respectfully submitted that claims 6, 38 and 39 independently distinguish over the applied art reference.

Claim 35 requires the first resolution (of the data) to be exponentially higher than the second resolution (of the data). The Examiner asserts that in Nishijima, the compression ratio (and correspondingly, the image resolution) varies from high, to intermediate, to low, and that this can be read as having "exponentially" higher image resolution, as claimed.

As described on page 11, lines 32-36, of the present application, an exponential change in resolution may be employed in response to a triggering event. Nishijima discloses that a number of compression ratios are available after the event, but lacks any teaching or suggestion of a resolution that varies exponentially over time based on an event.

Claim 36 requires that the control processor be operative to encrypt the data prior to storage in the memory. The Examiner asserts it is inherent that data encryption is involved in Nishijima because error detection and correction is disclosed at column 4, lines 61-64. Error detection and correction relate to detecting and correcting encoding errors. Encryption, on the other hand, relates to securing information whether in an encoded or non-encoded state. Hence, there is no correspondence between the required data encryption of claim 36 and the relied upon encoding error detection and correction disclosed by Nishijima.

Claim 40 requires that the control processor be operative to store only a predetermined amount of data following the event. As discussed above in connection with claim 4, the limiting of the

storage to a predetermined amount of data following the event allows any desired percentage of the memory to be used for capturing image data after the occurrence of the event. Nishijima explicitly teaches that recording stops only when either intentionally terminated or the end of the magnetic tape is reached, and lacks any teaching or disclosure of storing only a predetermined amount of data within the memory after an event.

Other claims rejected under §102(e) also recite features that have apparently been ignored by the Examiner. As discussed in Section X.1 above, such features include the number of video frames per unit time represented by stored data associated with the period of time close to the event is greater than the number of such frames for the period further from the event, as recited in claim 5; storage of data only in approximately half of the frame locations in memory following the event, as recited in claim 9; the memory is a plurality of memories corresponding to the number of sensors, as recited claim 10; a lens positioned to focus an image on the sensor and to cover a viewing angle, as recited in claims 12 and 14; and a purge switch, as recited in claim 34.

It is respectfully submitted that Nishijima lacks any teaching or suggestion of these features and accordingly, that the associated claims independently distinguish over the applied prior art.

Independent claim 15 requires storing first data associated with a time period closer to an event so as to have a first resolution and second data associated with a time period further from said event so as to have a second resolution different than the first resolution. As discussed above in connection with claim 1, the applied art lacks any teaching or suggestion of such features. Accordingly, it is respectfully submitted that claim 15 and its dependencies patentably distinguish over the applied prior art.

Additionally the claim 15 dependencies recite features that further and independently distinguish over the applied art. For example, claim 18 requires encrypting the first data and the

second data prior to storage, claim 21 requires that the second frame rate (i.e., the rate after the event) be less than the first frame rate (i.e., the rate before the event), and claim 43 requires that the first resolution be exponentially higher than the second resolution. It is respectfully submitted that Nishijima lacks any teaching or suggestion of these features.

3. THE APPLIED REFERENCES FAIL TO SUGGEST THE CLAIMED INVENTION

In rejecting claims under 35 U.S.C. 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967). It also is incumbent upon the Examiner to provide a basis in fact and/or cogent technical reasoning to support the conclusion that one having ordinary skill in the art would have been motivated to combine references to arrive at a claimed invention. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). In so doing, the Examiner is required to make the factual determinations set forth in Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 148 USPQ 459 (1966), and to provide a reason why one having ordinary skill in the art would have been led to modify the prior art reference to arrive at the claimed invention. Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985). Such a reason must stem from some teaching, suggestion or inference in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.d 281, 227 USPQ 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984); In re Sernaker, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983). Inherency requires certainty, not speculation. In re Rijckaert, 9 F.3rd 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); W. L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303

(Fed. Cir. 1983); In re Oelrich, 666 F.2d 578, 212 USPQ 323 (CCPA 1981); In re Wilding, 535 F.2d 631, 190 USPQ 59 (CCPA 1976). Objective evidence must be relied upon to defeat the patentability of the claimed invention. Ex parte Natale, 11 USPQ2d 1222 (BPAI 1988).

In determining obviousness, the inquiry is not whether each element existed in the prior art, but whether the prior art made obvious the invention as a whole for which patentability is claimed. Hartness Int'l, Inc. v. Simplimatic Eng'g Co., 819 F.2d 1100, 2 USPQ2d 1826 (Fed. Cir. 1987). It is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Wesslau, 353 F.2d 238, 147 USPQ 391 (CCPA 1951). Piecemeal reconstruction of prior art patents is improper, In re Kamm, 452 F.2d 1052, 172 USPQ 298 (CCPA 1972). The Examiner must give adequate consideration to the particular problems and solution addressed by the claimed invention. Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); In re Rothermel, 276 F.2d 393, 125 USPQ 328 (CCPA 1960).

The fact that the prior art could be modified so as to result in the combination defined by the claims does not make the modification obvious unless the prior art suggests the desirability of the modification. In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986). The test is what the combined teachings would have suggested to those of ordinary skill in the art. In re Keller, 642 F.2d 413, 208 USPQ 817 (CCPA 1981). Simplicity and hindsight are not proper criteria for resolving obviousness, In re Warner, supra. The proper approach to the issue of obviousness is whether the hypothetical person of ordinary skill in the art, familiar with the references, would have found it obvious to make a structure corresponding to what is claimed. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Sernaker, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983). Hindsight obviousness after the invention has been made is not the test. In

re Carroll, 601 F2d 1184, 202 USPQ 571 (CCPA 1979). The reference, viewed by itself and not in retrospect, must suggest doing what applicant has done. In re Shaffer, 229 F2d 476, 108 USPQ 326 (CCPA 1956); In re Skoll, 523 F2d 1392, 187 USPQ 481 (CCPA 1975).

The issue is not whether it is within the skill of the artisan to make the proposed modification but, rather, whether a person of ordinary skill in the art, upon consideration of the references, would have found it obvious to do so. The fact that the prior art could be modified so as to result in the combination defined by the claims would not have made the modification obvious unless the prior art suggests the desirability of the modification. See In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986), In re Keller, supra. See In re Laskowski, F2d., 10 USPQ2d 1397 (CAFC 1989).

Claims 13-14, 32-33 and 44-45 stand rejected under 35 USC §103(a) as being obvious over Nishijima in view of Freeman (U.S. Patent No. 6,002,808), and further in view of Chow (U.S. Patent No. 5,016,633). As discussed below it is respectfully submitted that the Examiner has not met the burden of proof in establishing the obviousness of the applied claims.

Claims 13 and 14 require that the recording device of the present invention further comprise an image sensor, including an artificial retina, to generate the data to be recorded. The Examiner admits that Nishijima fails to disclose that the image sensor includes an artificial retina. However, the Examiner contends that the artificial retina as claimed is a matter of design choice to incorporate well-known art. The Examiner asserts that Freeman and Chow, for example, make well known the use of this feature.

It is well established that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. The invention in Freeman is a hand gesture control system that uses an artificial

retina as a sensor device in recognizing and distinguishing the shapes formed by human hand gestures. As best understood, the use of an artificial retina is advantageous in this application because it provides a rapid means of calculating image moments through precalculation of x and y projections by the artificial retina chip itself (see Freeman, column 5, lines 34-40).

Chow discloses the use of the artificial retina chip in a surgical technique intended to correct certain types of retinal dysfunction. It is respectfully submitted that neither Freeman nor Chow teach or suggest a combination involving an image capturing and storage system. The purpose of the invention in Freeman is to rapidly determine the characteristics of a hand or other object in the field of views of a sensor so as to be able to provide game control, or any other type of computer display control (see column 5, lines 7-11), and hence, there would be no benefit to recording the image being analyzed. Further, it is respectfully submitted that Chow, which involves a medical device and procedure, is non-analogous art. Hence, neither Freeman nor Chow cures the acknowledged deficiency in Nishijima.

With regard to claims 32-33 and 44-45, the Examiner admits that Nishijima fails to disclose that the surveillance system comprises a tamper resistant housing and that such housing is portable, as required by the claims. However, the Examiner takes Official Notice that enclosing a video surveillance system in a tamper resistant housing and making it portable are nothing new and widely practiced in the art. However, the Examiner's Official Notice is not supported by any references to show what might have been obvious to a person of ordinary skill in the art at the time the invention was made. Although Appellants' requested in their response to the Official Action of April 14, 2000, that the Examiner provide such supporting evidence, or in its absence, withdrew the rejection based on these grounds, the Examiner has not done so in the subsequent final official Action of September 26, 2000 (paper 11) or in the Advisory Action of December 21, 2000 (paper 13).

With regard to the other features of claims 44 and 45, the

Examiner relies on the grounds for rejection discussed above based on Nishijima.

Claim 44 requires a control processor operative to receive the signal representing the event and to store the data in the at least one circular buffer memory such that the stored data associated with a portion of the time period after receipt of the event signal has a first resolution and the stored data associated with a portion of the time prior to receipt of the event signal has a second resolution lower than the first resolution. As discussed above in connection with claim 1, the applied art, whether taken individually or in any combination, lacks any teaching or suggestion of such a control processor.

Further, the applied art lacks any teaching or suggestion of storing data in a circular buffer memory. It is acknowledged that Nishijima discloses a variety of recording media that may be used to store captured data, including a magnetic-optical compact disc, and a random access memory (see column 3, lines 30-33), but the Examiner fails to identify any disclosure that the memory in Nishijima is organized as a circular buffer. Accordingly, it is respectfully submitted that claim 44 and its dependency, claim 45, patentably distinguish over the applied prior art.

Dependent claim 45 requires, in addition, a user activated capture switch. Following user activation of the capture switch, the control processor is operative to store only a predetermined amount of data within the at least one circular buffer memory. Also required is a user activated purge switch. Following user activation of the purge switch, the data stored in the memory is erased. Additionally required is a user activated still switch. Following user activation of the still switch, the control processor is operative to store a single data sample.

As discussed above, the applied art fails to teach or suggest a user activated capture switch or a control processor operative to store only a predetermined amount of data after activation of such a switch. No specific disclosure within the applied art has been identified as corresponding to the recited user activated purge switch, user activated still switch, or the

control processor which is operative to erase the data stored in the memory or store a single data sample, based on activation of the applicable switch. It is further respectfully submitted that no such disclosure exists within the teachings of the applied art references. Accordingly, it is respectfully submitted that claim 45 further and independently distinguishes over the applied art combination.

CONCLUSION

It is respectfully submitted that the Examiner has (i) failed to establish a prima facie case for the rejection, (ii) ignored that which is disclosed within the application, (iii) ignored features recited in the rejected claims, (iv) failed to apply art which teaches or suggests, the claimed invention and (v) has applied art in a manner inconsistent with its teachings.

Thus, it is respectfully submitted that the rejections of claims 1-12, 15-21 and 34-43 as anticipated under 35 U.S.C. §102 by Nishijima (U.S. Patent No. 5,915,069), and of claims 13-14, 32-33 and 44-45 as obvious under 35 U.S.C. §103(a) over Nishijima in view of Freeman (U.S. Patent No. 6,002,808), and further in view of Chow (U.S. Patent No. 5,016,633), are improper.

In summary, Applicants respectfully submit that the applied references do not disclose or suggest features recited in rejected claims 1, 15 and 44, upon which all other pending claims depend. It is further respectfully submitted that the applied references also fail to disclose numerous other features recited in the pending dependent claims. Furthermore, the applied references (one of which contain the prior teachings of present inventor W.T. Freeman) fail to teach the specific advantages achieved by the claimed invention. Accordingly, it is submitted that the applied art does not provide any teaching, or suggestion within its teachings, which would lead to the features or advantages of the instant invention, and the claims patentably define over the art.

The rejection of claims 1-21 and 32-45 under 35 U.S.C. §102 and/or §103(a) is in error and reversal is clearly in order and is courteously solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 12-0429 and please credit any excess fees to such deposit account.

Respectfully submitted,

LALOS & KEEGAN

Phillip G. Avruch
Registration No. 46,076

PGA/led
1146 Nineteenth St., N.W.
Fifth Floor
Washington, D.C. 20036-3703
Telephone(202) 887-5555
Facsimile (202) 296-1682
Date: March 30, 2001

APPENDIX

CLAIMS ON APPEAL

1. A recording device for capturing data, said recording device comprising:

at least one memory for storing data associated with a time period;

a control processor operative to store the data in the at least one memory such that the stored data associated with a portion of the time period closer to an event has a first resolution and the stored data associated with a portion of the time period further from the event has a second resolution different than the first resolution.

2. The device of claim 1, wherein said device further comprises:

at least one first sensor type operative to generate the data; and

at least one second sensor type operative to generate a signal representing the event;

wherein the control processor operates to store the data such that the stored data associated with the portion of the time period closer to the event has the first resolution responsive to the signal.

3. The device of claim 2, wherein said at least one second sensor type includes an accelerometer.

4. The device of claim 1, further comprising:

a capture switch;

wherein the control processor is operative to store only a predetermined amount of data within said memory following user activation of said capture switch.

5. The device of claim 1, wherein:

the data is video data representing a plurality of frames; and

the processor is operative such that a number of the plurality of frames per a unit of time represented by the stored video data associated with the portion of the time period closer to the event is greater than a number of the plurality of frames per the unit of time represented by the stored video data associated with the portion of the time period further from the event.

6. The device of claim 1, wherein said control processor is further operative to compress the data associated with the portion of the time period closer to the event at a first compression ratio and to compress the data associated with the portion of the time period further from the event at a second compression ratio different than the first compression ratio, prior to the storage of the data within said memory.

7. The device of claim 1, wherein said processor is further operative to store the data in said memory at a first rate prior to the event and at a second rate subsequent to the event.

8. The device of claim 1, wherein said second resolution is less than said first resolution.

9. The device of claim 1, wherein said control processor is operative to store the data only in approximately one-half the memory following the event.

10. The device of claim 1, further comprising:

a plurality of sensors each operative to generate a respective portion of the data;

wherein said at least one memory is a plurality of memories corresponding in number to said plurality of sensors;

wherein said control processor is operative to store the respective portions of data generated by each of said plurality of sensors in a respective one of said plurality of memories.

11. The device of claim 1, further comprising:

an image sensor, including a charge coupled device, operative to generate the data.

12. The device of claim 11, further comprising:

a lens positioned so as to focus an image on said image sensor to cover a viewing angle.

13. The device of claim 1, further comprising:

an image sensor, including an artificial retina, operative to generate the data.

14. The device of claim 13, further comprising:

a lens positioned so as to focus an image on said artificial retina to cover a viewing angle.

15. A method for recording data, comprising the steps of:

storing first data associated with a time period closer to an event so as to have a first resolution; and

storing second data associated with a time period further from said event so as to have a second resolution different than the first resolution.

16. The method of claim 15, further comprising the step of:

compressing said first data and said second data prior to storing said first data and said second data.

17. The method of claim 16, wherein said compressing is performed with an asymmetric compression routine.

18. The method of claim 16, further comprising the step of encrypting said first data and said second data prior to storing said first data and said second data.

19. The method of claim 15, further comprising the steps of:

storing said data at a first rate prior to said event; and

storing said data at a second rate subsequent to said event.

20. The method of claim 19, wherein said second rate is greater than said first rate.

21. The method of claim 19, wherein said second rate is less than said first rate.

32. The device of claim 1, further comprising a tamper resistant housing configured to house the control processor and the memory.

33. The device of claim 32, wherein said housing is portable.

34. The device of claim 1, wherein said control processor is further operative to purge the contents of said at least one memory upon user activation of a switch.

35. The device of claim 1, wherein the first resolution is exponentially higher than the second resolution.

36. The device of claim 1, wherein the control processor is operative to encrypt the data prior to storage in the memory.

37. The device of claim 1, wherein the first and the second resolutions are at least one of temporal resolutions and spatial resolutions.

38. The device of claim 1, wherein the first and the second resolutions are spatial resolutions and the control processor is operative to compress the data associated with the portion of the time period closer to an event at a first compression ratio and the data associated with the portion of the time period further from an event at a second compression ratio different than the first compression ratio.

39. The device according to claim 1, wherein the first and the second resolutions are temporal resolutions and the control processor is operative to store, on a per unit of time basis, more of the data associated with the portion of the time period closer to an event and less of the data associated with the portion of the time period further from an event.

40. The device of claim 1, wherein the control processor is operative to store only a predetermined amount of data following the event.

41. The method of claim 15, further comprising the steps of:

storing said data at the second resolution prior to the event; and

storing said data at the first resolution subsequent to the event.

42. The method of claim 15, wherein said first resolution is higher than said second resolution.

43. The method of claim 15, wherein the first resolution is exponentially higher than the second resolution.

44. A compact portable device for recording data with no moving parts, said recording device comprising:

at least one first sensor type operative to generate data associated with a period of time;

at least one second sensor type operative to generate a signal representing an event;

at least one circular buffer memory for storing the data;

a control processor operative to receive the signal representing the event and to store the data in the at least one circular buffer memory such that the stored data associated with a portion of the time period after receipt of the event signal has a first resolution and the stored data associated with a

portion of the time prior to receipt of the event signal has a second resolution lower than the first resolution;

a portable housing configured to house the control processor and the memory; and

at least one connector disposed on said housing for outputting the stored data.

45. The device of claim 44, further comprising:

a user activated capture switch, wherein the control processor is operative to store only a predetermined amount of data within the at least one circular buffer memory following user activation of the capture switch;

a user activated purge switch, wherein the data stored in the memory is erased following user activation of the purge switch;

a user activated still switch, wherein the control processor is operative to store a single data sample following user activation of the still switch; and

at least one power source for powering the at least one first sensor type, the processor, and the at least one circular buffer memory;

wherein the housing is a tamper resistant housing and is further configured to house the at least one first sensor type.